Riezler, Kurt, *Scientific Means and Humane Ends.*, **Virginia Quarterly Review,** *18:4 (1942:Fall)*
Extracted from *PCI Full Text,* published by ProQuest Information and Learning Company.

SCIENTIFIC MEANS AND HUMANE ENDS

By Kurt Riezler

HERE are three books, concerned with science, its history, its potentalities in the future, its relations to man. They are not connected, but they cannot help leading from different angles to a modern problem of increasing gravity.

A short review can hardly do justice to these books, report the contents, state agreement, and give reasons for disagreement. Charles Singer gives as good a short history of science as a "short history" can be. Compression and the emphasis on the historical nexus is bound to cause slight violence here and there to so vast a material, but the author knows his material and presents it with remarkable skill. A reader who is interested in finding out what conclusions this history of science suggests about the situation in which modern man finds himself might ask a question concerning the relation of philosophy to science. In dealing with periods in which science was under the guidance of philosophy the author assumes the superiority of a science that renounces any consideration of the world as a whole and insists on concrete observation splitting the whole into parts and letting the parts tell whatever story they may tell, provided that they tell it in the form of laws, "constant relations between variables," or "correlation between quantities." At the end of his story, however, he cannot suppress some longing for philosophy. "It seems probable that science itself is now reaching a stage in which an adequate scientific equipment will involve some regard to the world as an interconnected whole." But, alas, this will not happen because science is nearing a stage of perfection in which we could

A Short History of Science to the Nineteenth Century. By Charles Singer. Oxford University Press. $3.75. *The Men Who Make the Future.* By Bruce Bliven. Duell, Sloan and Pearce. $3.00. *Science and Man.* Edited by Nanda Anshen. Harcourt, Brace and Company. $4.00.

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hope to connect our findings in a "whole," on the contrary, because as the different approaches fall apart, a need will arise that science defined by a method no longer feels confident to satisfy.

In "The Men Who Make the Future" Bruce Bliven reports the results of a visit to the great laboratories and research centers of the United States: what we know and do not know and are going to know. It is an inspiring, enthusiastic tale of advance, of actual progress in research and of potential progress in the life of mankind which will be brought about by the application of discoveries in the making. Really "the doors have swung open into a wonderland of new knowledge." Again and again, however, the author feels uneasy: what kind of a society could the scientists produce "if they were given a chance"? But will they be given a chance, not only for applying their discoveries, but for indicating the ends to which these discoveries should be used? Such doubts, however, cast only a slight shadow on the author's enthusiasm.

Winston Churchill made a "perverted science" responsible for a certain efficiency of Nazi Germany. Indeed, a problem lurks behind the advancement of science, increasing in gravity as science proceeds. Science, as defined by the scientific method, is concerned with means, not with ends. Its knowledge has the form "if A, then B." It relates facts by laws. The chemist may or may not be humane; chemistry is indifferent to any ends. It teaches man how to manipulate the forces of nature. Chemical compounds can be used for any purpose, constructive or destructive. They are used for breaking down the moral resistance of political opponents, if administered in the cellars of the Gestapo or Ogpu. They can be mixed into the food of soldiers who then may fight in blind rage for any cause. If this has not been done already, it might be done tomorrow. Nothing limits the future power of explosives. The scientist manipulates means, but who will manipulate the ends? Those who do

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will be the men who make the future. They will ask for and get the help of the scientists. They will know how to manipulate the scientists. The scientist is humane, by nature; by nature, too, he is an expert in his laboratory, but by no means in the world at large. Here he feels and for the most part is helpless. But if the chemist is not an expert in life at large, the social scientist should be. He should know how to manipulate the forces of society. Here, however, my argument reaches the crucial point. The social scientist, before all, wants to be a scientist. He emulates the method of the natural sciences, which demands facts, unmistakable and verifiable facts, and correlations between such facts. Everything else is deemed to be "unscientific." But this procedure excludes ends, or values, except in the form of "interests," valuations to be described in terms of "facts." The definition of the method determines the subject matter. The sociologist indulges in statistics based on the facts collected by questionnaires and hopes that the average will yield the laws which the individual case refuses to disclose. Facility of verification guides the selection of facts and predetermines their relevance. "Scientific" psychology abhors "introspection" and escapes into registering the reactions of rats. If Bruce Bliven, in his enthusiasm for the achievements of science, registers the measurement of "genius" as progress, he only gives a striking example of the nonsense which fondness for a method can produce about a subject matter. Some caution is needed: the scientific spirit requires before all a certain humble devotion to the subject matter. The social scientist does not deal with ends. He gets the ends from a society and inquires by what means these ends could be achieved. This is all right, as long as the common sense of the common man is sure of the ultimate ends. If the common man lost his common sense, the scientist could not help and probably would be compelled to provide a fool in power with efficient means for foolish ends. The only thing a scientist can do is to find out the condi-

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tions under which the common man is likely to lose his common sense and to indicate ways and means to avoid such conditions.

That leads me to the third of the three books. Twenty-four learned papers of prominent scholars deal with different aspects of different relations between science and man. Most of the papers deserve a conscientious report and a thorough analysis. The richness and diversity of the material presented would give any review cause to grow into a small volume. I shall restrict myself to a few remarks concerning the book as a whole. The editor who succeeded in collecting such important contributions from scholars so eminent tries hard to present it as a consistent whole and nearly succeeds. Man is a whole; science has dehumanized man; knowledge is one and not many. This situation and the needs arising from it can hardly be denied. A student daring enough to ask "what is man?" and eager to get an answer would be at a loss as to which department of a university he should turn to. From each he would not only get a different answer, but those answers would by no means fit into one another. However, the subject matter is one and the borderlines between the departments differentiate merely one type of professor from another type. If this student, representing the kind of animal that alone desires to know himself, turns to our book, he will not get an answer, though he will learn a great deal about the difficulties of getting one. He will turn to the papers which promise to lead not into a partial aspect but to the problem as a whole. He might first listen to the siren chant of Jacques Maritain and be ready to admit that there is a kind of knowledge, called wisdom, distinct from the knowledge science can attain to, but less ready to be led into this wisdom by Thomas Aquinas. If he prefers facing the difficulties himself to an easy escape into the "Summa Theologiae," he will go on reading and discover that prominent scholars are worried, honestly and deeply. They try in different ways to liberate

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the social sciences from the pressure of a too narrow definition of the scientific method and to overcome the cleavage between the "is" and the "ought." He will find excellent arguments, but no agreement, as to how this could be done. He will find but little comfort in Ralph Barton Perry's paper on the science of value and the value of science. Perry defines values as "interests," but interests, of course, are facts, and "values," if the term has any meaning, are concerned with the "right or wrong" even of interests. No "maxim of reflective agreement," implying an interest in the harmonious happiness of all mankind, will help us much in deciding who is right or wrong in concrete conflicts of interests. Our student may turn to Bronislav Malinowski's "Scientific Approach to the Study of Man" and here find a leading anthropologist expounding an elaborate conceptual scheme as the basis of a science of culture. But despite the richness of this scheme, we wonder whether man's culture can really be articulated on the basis of a list of biological needs, the satisfaction of those needs, and an apparatus of instrumentalities. It may be that here again facility of verification directs the ranking, if not the selection, of the facts. If our student finally studies Frank H. Knight's "Fact and Value in Social Science" he will find a comprehensive and realistic view of the concrete difficulties, with no attempt to escape or conceal the deepest worry. It is indisputable to the author that man is a "physical object" to be explained in considerable part by the physical sciences. Just as indisputably he is a biological organism, and further he is a being who "thinks," and "solves problems," an individual and a social animal, an "economic man" and a "romantic fool." Man "must be described in terms of at least a half dozen fundamental kinds of being." It is on the basis of such a perplexing variety of views that the author expounds the complex relationship between knowledge and social action. But our student, unless he abandons his original question as one not to be asked, may well ponder upon his own perplex-

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ity: Though man may be all this, he is still one. It is as a physical object that he is an economically planning being and a romantic fool. After all, there must be a discipline, concerned with the compatibility of this "half dozen fundamental kinds of being" in one and the same entity, "Man." Are these kinds of being only different aspects, relative to different conceptual schemes? Thus our student turns to what is called "philosophy," a need of which is bound to grow as man's bewilderment increases. The student finishes the third book with the hope in which the author of the first concludes his short story of science. He would be wise, however, to keep in mind that it is to the common sense of the common man that the student of science owes his opportunity to ponder upon perplexing questions. Hence we may do well to apply any knowledge we may have to preventing conditions in which the common man may lose his common sense.

A MISPLACED TOMBSTONE

By William S. Weedon

ONE wonders how Plato would have felt if, instead of practicing the art of dialectic and engaging in the pursuit of truth, the members of the Academy had devoted themselves, during the later years of his life, to explaining and expounding the "Platonic point of view" to the rest of the world and to themselves. Plato was not easily stirred to wrath, but there can be little doubt that his sensitive intellect would have been deeply shocked. And it would have been his intellect, not his ego; Plato makes it abundantly clear that ideas are not the private possession of any man, and that the use of names in connection with a philosophical position is little more than a mnemonic. That Plato

The Philosophy of Alfred North Whitehead. Edited by Paul Arthur Schlipp. Northwestern University, Evanston, Ill. $4.00.

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